

The Periodic Table is a list of all the known elements. It is organized by increasing atomic number. There are two main groups on the periodic table: metals and nonmetals. The left side of the table contains elements with the greatest metallic properties. As you move from the left to the right, the elements become less metallic with the far right side of the table consisting of nonmetals. The elements in the middle of the table are called “transition” elements because they are changed from metallic properties to nonmetallic properties. A small group whose members touch the zigzag line are called metalloids because they have both metallic and nonmetallic properties.

The table is also arranged in vertical columns called “groups” or “families” and horizontal rows called “periods.” Each arrangement is significant. The elements in each vertical column or group have similar properties. Group 1 elements all have the electron in their outer shells. This gives them similar properties. Group 2 elements all have 2 electrons in their outer shells. This also gives them similar properties. Not all of the groups, however, hold true for this pattern. The elements in the first period or row all have one shell. The elements in period 2 all have 2 shells. The elements in period 3 have 3 shells and so on.

There are a number of major groups with similar properties. They are as follows:

Hydrogen: This element does not match the properties of any other group so it stands alone. It is placed above group 1 but it is not part of that group. It is a very reactive, colorless, odorless gas at room temperature. (1 outer level valence electron)

Group

1: Alkali Metals –These metals are extremely reactive and are never found in nature in their pure form. They are silver colored and shiny. Their density is extremely low so that they are soft enough to be cut with a knife. (1 outer level valence electron)

Group 2: Alkaline-earth Metals –Slightly less reactive than alkali metals. They are silver colored and more dense than alkali metals. (2 outer level valence electrons)

Groups 3 –12: Transition Metals –These metals have a moderate range of reactivity and a wide range of properties. In general, they are shiny and good conductors of heat and electricity. They also have higher densities and melting points than groups 1 & 2. (1 or 2 outer level valence electrons)

Lanthanides and Actinides: These are also transition metals that were taken out and placed at the bottom of the table so the table wouldn't be so wide. The elements in each of these two periods share many properties. The lanthanides are shiny and reactive. The actinides are all radioactive and are therefore unstable.

Group 13: Boron Group –Contains one metalloid and 4 metals. Reactive. Aluminum is in this group. It is also the most abundant metal in the earth's crust. (3 outer level valence electrons)

Group 14: Carbon Group –Contains one nonmetal, two metalloids, and two metals. Varied reactivity. (4 outer level valence electrons)

Group 15: Nitrogen Group –Contains two nonmetals, two metalloids, and one metal. Varied reactivity. (5 outer level valence electrons)

Group 16: Oxygen Group –Contains three nonmetals, one metalloid, and one metal. Reactive group. (6 outer level valence electrons)

Groups 17: Halogens –All nonmetals. Very reactive. Poor conductors of heat and electricity. Tend to form salts with metals. Ex. NaCl: sodium chloride also known as "table salt". (7 outer level valence electrons)

Groups 18: Noble Gases –Unreactive nonmetals. All are colorless, odorless gases at room temperature. All found in earth's atmosphere in small amounts. (8 outer level valence electrons, except helium which has 2 valence electrons)

Use these images below to help you understand where the different groups/families are located! 😊

		Alkali Metal										Alkaline earth metal										Lanthanide										Actinide										Transition Metal										Other Metals										Metalloids										Non Metals										Halogen										Noble Gas									
1	IA	1	H	1.0079	2	IIA	4	Be	9.0122	13	IIIA	5	B	10.811	6	C	12.011	7	N	14.007	8	O	15.999	9	F	18.998	10	VIIA	18	He	4.0026																																																																						
2		3	Li	6.941	5	B	10.811	6	C	12.011	7	N	14.007	8	O	15.999	9	F	18.998	10	Ne	20.180																																																																															
3		11	Na	22.990	12	Mg	24.305	13	Al	26.982	14	Si	28.086	15	P	30.974	16	S	32.065	17	Cl	35.453	18	Ar	39.948																																																																												
4		19	K	39.098	20	Ca	40.078	21	Sc	44.956	22	Ti	47.867	23	V	50.942	24	Cr	51.996	25	Mn	54.938	26	Fe	55.845	27	Co	58.933	28	Ni	58.693	29	Cu	63.546	30	Zn	65.38	31	Ga	69.723	32	Ge	72.64	33	As	74.922	34	Se	78.96	35	Br	79.904	36	Kr	83.798																																														
5		37	Rb	85.468	38	Sr	87.62	39	Y	88.906	40	Zr	91.224	41	Nb	92.906	42	Mo	95.96	43	Tc	98.00	44	Ru	101.07	45	Rh	102.91	46	Pd	106.42	47	Ag	107.87	48	Cd	112.41	49	In	114.82	50	Sn	118.71	51	Sb	121.76	52	Te	127.60	53	I	126.90	54	Xe	131.29																																														
6		55	Cs	132.91	56	Ba	137.33	57	La	138.91	58	Ce	140.12	59	Pr	140.91	60	Nd	144.24	61	Pm	145	62	Sm	150.36	63	Eu	151.96	64	Gd	157.25	65	Tb	158.93	66	Dy	162.50	67	Ho	164.93	68	Er	167.26	69	Tm	168.93	70	Yb	173.05	71	Lu	174.97																																																	
7		87	Fr	223	88	Ra	226	89	Ac	227	90	Th	232.04	91	Pa	231.04	92	U	238.03	93	Np	237	94	Pu	244	95	Am	243	96	Cm	247	97	Bk	247	98	Cf	251	99	Es	252	100	Fm	257	101	Md	258	102	No	259	103	Lr	262																																																	

57	58	59	60	61	62	63	64	65	66	67	68	69	70	71
La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
138.91	140.12	140.91	144.24	145	150.36	151.96	157.25	158.93	162.50	164.93	167.26	168.93	173.05	174.97
89	90	91	92	93	94	95	96	97	98	99	100	101	102	103
Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr
227	232.04	231.04	238.03	237	244	243	247	247	251	252	257	258	259	262

